REMARKS

Claims 1-34 are pending in the application. Claims 1-3, 8-14, 17-20, 25-31 and 34 stand rejected under 35 U.S.C. § 112, ¶ 2 as indefinite. Claims 1-34 stand rejected under 35 U.S.C. § 101 as directed to subject matter that is not patentable. Claims 1-5, 8-9, 15-22, 25-26 and 32-34 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,969,045 to Haruki et al. ("Haruki"). Claims 6 and 23 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Haruki and U.S. Patent Pub. No. 2004/0267854 to Haider et al ("Haider"). Claims 13 and 30 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Haruki and U.S. Patent No. 6,076,964 to Wu et al ("Wu"). Claims 14 and 31 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Haruki and U.S. Patent No. 5,398,076 to Lum et al ("Lum").

Applicant has amended claims 1-23, 8-14 and 16-34 to more distinctly claim and particularly point out applicant's invention. Applicant respectfully requests reconsideration of claims 1-34 in light of these amendments and the following remarks.

REJECTIONS UNDER 35 U.S.C. § 101.

The Examiner rejected claims 1-34 as directed to subject matter that is not patentable, arguing that independent method claims 1 and 17 are directed to an abstract idea that fails to achieve a tangible result, and that independent claims 18 and 34 are directed to an information carrier which is not a process, machine, manufacture or composition of matter. Applicant has amended independent claims 1 and 17 to recite a computer implemented method for adjusting the color information of an image by modelling a non-linear transfer function with a power law function, and has amended independent claims 18 and 34 to recite a computer program product implemented on a machine-readable medium comprising instructions operable to cause a programmable processor to perform that computer implemented method. As such, applicant respectfully submits the claims are directed to subject matter that "produces a useful, concrete, tangible, result," and that has been judicially recognized to be patentable subject matter. *See,*

State Street Bank & Trust Co. v. Signature Financial Group, Inc., 47 USPQ2d 1569,1601 (Fed. Cir. 1998).

REJECTIONS UNDER 35 U.S.C. § 112, ¶ 2

The Examiner rejected claims 1, 10, 12-14, 17-18, 27, 29, 31 and 34 as indefinite for containing a misspelling of the word "modelling." The examiner is mistaken. The applicant respectfully calls the examiner's attention to any collegiate dictionary. Both 'modeling' and 'modelling' are proper and acceptable spellings for the word.

The Examiner rejected claims 2 and 3 for lacking antecedent basis for the limitations "receiving the second power law function that was generated in the preceding iteration" and "the first iteration," respectively. While the applicant respectfully disagrees, he has nonetheless amended claims 2 and 3 to more distinctly claim the invention. Claim 1 recites a computer implement method, comprising iteratively "receiving a first power law function; generating an auxiliary function from the transfer function and local differences between the transfer function and the first power law function; fitting a second power law function to the auxiliary function; and calculating a modelling error from the second power law function and the transfer function." Claim 3 has been amended to recite the computer implemented method of claim 1, "wherein in a first iteration, the first power law function is a power law function obtained by fitting the transfer function." In any iterative procedure, there is a first iteration. Claim 3 recites the first power law function in the first iteration of the procedure recited in claim 1 "is a power law function obtained by fitting the transfer function." Applicant respectfully submits such a claim is definite. Claim 2 has been amended to recite the computer implemented method of claim 3, "wherein in an iteration other than the first iteration, the first power law function is the second power law function that was fit to the auxiliary function in the immediately preceding iteration." In any iterative procedure, one or more iterations (e.g., the 2^{nd}, 3^{rd}, 4^{th} . . . $N\text{-}1^{st}$, N^{th}, $N+1^{st}$ . . .) can follow the first iteration. In any such iteration, such as the N^{th}, the immediately preceding iteration is well-defined – i.e., it is the $N\text{-}1^{st}$. Claim 2 recites the first power law function in any

iteration other than the first iteration "is the second power law function that was fit to the auxiliary function in the immediately preceding iteration." Thus, the first power law function in the 2nd, 3rd, or N^{th} iteration, is the second power law function that was fit to the auxiliary function in the 1^{st}, 2^{nd}, or $N\text{-}1^{st}$ iteration, respectively. Again, applicant respectfully submits that such a claim is definite.

The Examiner rejected claims 19 and 20, which are directed to a computer program product comprising instructions operable to cause a programmable processor to perform the methods of claims 2 and 3, for the same reasons he rejected claims 2 and 3. While the applicant disagrees with the rejection, he has nonetheless amended claims 19 and 20 in a manner that is consistent with the amendments made to claims 2 and 3, discussed above. Consequently, applicant respectfully submits that claims 19 and 20 are definite for the same reasons claims 2 and 3 are definite.

The Examiner rejected claims 8 and 25 as indefinite because the term "a modifying parameter" is vague and indefinite. To the contrary, the specification clearly discloses that "a modifying parameter" is nothing more than a "weight," and in particular discloses a modifying parameter to be "[a] weight that specifies how much of the calculated difference D_i [between a transfer function and a fitted power law function] is used to modify the transfer function value." *Specification* at 15:20-22. In view of this clear disclosure, the applicant respectfully submits the term "a modifying parameter" is neither vague, nor indefinite.

The Examiner rejected claims 9 and 26 for reciting the term "optimize," which the Examiner argues renders these claims indefinite. Applicant has amended claims 9 and 26 to recite a method and computer program product for "determining a value for the modifying parameter that minimizes the modelling error between the transfer function and the power law function that is fit to the auxiliary function that is generated with that modifying parameter." Applicant respectfully submits that claims 9 and 26, as amended, are definite.

REJECTIONS UNDER 35 U.S.C. § 102(b)

The Examiner rejected claims 1-5, 8-9, 15-22, 25-26 and 32-34 as anticipated by Haruki. The applicant respectfully disagrees, and traverses the rejection for the reasons noted below.

Claim 1 recites a computer implement method, comprising "receiving a transfer function, wherein the transfer function specifies a plurality of output values corresponding to a plurality of input values; and iteratively receiving a first power law function; generating an auxiliary function from the transfer function and local differences between the transfer function and the first power law function; fitting a second power law function to the auxiliary function; and calculating a modelling error from the second power law function and the transfer function." The term "fitting" is used in claim 1 in its mathematical sense, and means "to adjust (a smooth curve of a specified type) to a given set of points." *Webster's Ninth New Collegiate Dictionary* (Merriam-Webster, 1989). For example, the application discloses "fit[ting] a power law function to [a] received transfer function . . . . using a data fitting algorithm that optimizes the exponent and other parameters of the power law function." *Application* at 9:23-25. The applicant respectfully submits that Haruki fails to disclose fitting a power law function or any other function to a received transfer function.

The Haruki patent discloses "a video camera having an automatic iris function [that] automatically adjust[s] exposure in response to a video signal obtained from an image sensor." *Haruki* at 1:11-14. The video camera includes gamma correction circuitry for "performing gamma correction for further correcting automatic exposure to prevent overexposure in a high luminance portion and underexposure in a low luminance portion" of the received signal. *Id.* at 2:52-57. For each field or frame of the received video signal, the Haruki camera determines a gamma correction value appropriate for the luminance in that field or frame. For example, the camera determines a current gamma correction value γ in a current field or frame, which it then compares to a previously determined gamma correction value γ_0 determined in a previous field or frame. *See, id.* at 15:64-68. In both the current and previous frames, the gamma correction value is determined from a gamma function whose formula is $\gamma = a_0 \text{ LOG } (Z_{max} / Z_{min}) + b_0$.

where a_0 and b_0 are experimentally determined constants, *see, id.* at 14:53-61, and Z_{max} and Z_{min} are the maximum and minimum exposures in different areas of the field or frame under consideration. *See, id.* at 9:14-38 and 10:22-26. When the gamma correction value γ for the current field or frame is very different from the gamma correction value γ_0 for the previous field or frame, the Haruki camera gradually adjusts the gamma correction value from γ_0 to γ in a discrete series of steps rather than all at once or "at a stroke." *See, id.* at 15:66-16:2. In each step, the gamma correction value is either increased or decreased from its previous value by a step amount *d*, which is determined by dividing the range between the minimum and maximum gamma correction values into *n* discrete steps. *See, id.* at 16:3-18.

The Examiner argues that Haruki discloses "receiving a first power law *function*" in receiving a single gamma correction value γ, and "generating an auxiliary *function* from the transfer *function* and local differences between the transfer *function* and the first power law *function*" in determining the difference between the gamma correction values γ and γ_0 (presumably since the examiner reads the single value γ_0 to be the first power law *function*). *Office Action* at 5. However, a function is "a mathematical correspondence that assigns exactly one element of one set to each element of the same or another set." *Webster's Ninth New Collegiate Dictionary* (1989).[1] The terms "transfer *function*", "auxiliary *function*" , and "first power law *function*" are used in this sense in the claims. For example, the application discloses that the "received transfer function "specifies the transfer function values (i.e., output values) for a set of input values." *Application* at 9:14-15. Thus, disclosing the receipt of a single gamma correction value γ, as opposed to a set of gamma correction values $\{\gamma_i\}$, does not disclose "receiving a gamma correction transfer *function*." Nor does disclosing the receipt of a second gamma correction value γ_0 disclose "receiving a first power law *function*." Nor does disclosing the difference between the two gamma correction values γ and γ_0 disclose "generating an auxiliary *function* from the gamma correction transfer *function* and local differences between the transfer *function* and a first power law *function*." Nor does disclosing incrementally increasing

[1] Strictly speaking, this is a limited definition that only describes single-valued functions. While this limited definition is sufficient for the present purposes, it should in no way limit the meaning of the mathematical definition of "function" as used in the claims to single-valued functions.

the gamma correction value from its current value γ_0 to its desired value γ in incremental steps of size *d* disclose "fitting a second power law *function* to the auxiliary function" as the Examiner contends. *See, id.* In short, the Haruki patent, which discloses a single, experimentally determined, gamma correction function $\gamma = a_0 \text{ LOG } (Z_{max} / Z_{min}) + b_0$, fails to disclose any of the limitations of "receiving a first power law *function*", "generating an auxiliary *function* from the transfer function and local differences between the transfer function and the first power law function", "fitting a second power law *function* to the auxiliary function", or "calculating a modelling error from the second power law function and the transfer function." Consequently, claim 1 is patentable over the Haruki patent for at least these reasons.

Claims 2-16 depend from claim 1, and are therefore patentable over the Haruki patent for at least the same reasons as claim 1. Claims 18-33 recite computer program products comprising instructions operable to cause a programmable processor to perform the methods recited in claims 1-16, respectively. They are therefore patentable over the Haruki patent for at least the same reasons as claims 1-16. Finally, claims 17 and 34 recite methods and computer program products for performing methods for modelling a non-linear transfer function comprising "receiving a transfer function, wherein the transfer function specifies a set of output values corresponding to a set of input values; fitting the transfer function with a first power law function; and iteratively, until a termination flag is set: reflecting the first power law function about the transfer function to generate an auxiliary function; fitting the auxiliary function with a second power law function; and calculating a modelling error from the second power law function and the transfer function." Since the Haruki patent fails to disclose *fitting* a received transfer *function* with a power law *function* as discussed above, it necessary also fails to disclose "reflecting the first power law *function* about the transfer *function* to generate an auxiliary *function*; fitting the auxiliary *function* with a second power law *function*; and calculating a modelling error from the second power law *function* and the transfer *function*." Consequently, claims 17 and 34 are patentable over the Haruki patent for at least these reasons.

REJECTIONS UNDER 35 U.S.C. § 103(a)

The Examiner rejected claims 6 and 23 as obvious in view of the combination of Haruki and Haider. Claim 6 depends from claim 1, while claim 23 depends from claim 18. The Examiner relies on Haider for "disclos[ing] a converter that performs a logarithmic conversion for [an] input signal (a function)." *Office Action* at 14. Significantly, the Examiner does not rely on Haider for disclosing any of the limitations "receiving a first power law function", "generating an auxiliary function from the transfer function and local differences between the transfer function and the first power law function", "fitting a second power law function to the auxiliary function", or "calculating a modelling error from the second power law function and the transfer function" found to be missing in the principal Haruki patent as applied to claims 1 and 18, as fully discussed above. Consequently, the Examiner has failed to establish a *prima facie* case that claims 6 and 23 are obvious in view of the combination of Haruki and Haider, and claims 6 and 23 should be allowed to issue for at least this reason. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992).

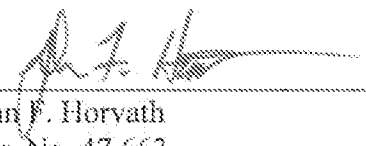
The Examiner rejected claims 13 and 30 as obvious in view of the combination of Haruki and Wu. Claim 13 depends from claim 1, while claim 30 depends from claim 18. The Examiner relies on Wu for "disclos[ing] using a total square error technique to calculate a[n] error for a non-linear dynamic model." *Office Action* at 15. Significantly, the Examiner does not rely on Wu for disclosing any of the limitations "receiving a first power law function", "generating an auxiliary function from the transfer function and local differences between the transfer function and the first power law function", "fitting a second power law function to the auxiliary function", or "calculating a modelling error from the second power law function and the transfer function" found to be missing in the principal Haruki patent as applied to claims 1 and 18, as fully discussed above. Consequently, the Examiner has failed to establish a *prima facie* case that claims 13 and 30 are obvious in view of the combination of Haruki and Wu, and claims 13 and 30 should be allowed to issue for at least this reason. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992).

The Examiner rejected claims 14 and 31 as obvious in view of the combination of Haruki and Lum. Claim 14 depends from claim 1, while claim 31 depends from claim 18. The Examiner relies on Lum for "disclos[ing] using a maximum absolute error technique to calculate an error with and without gamma correction." *Office Action* at 14. Significantly, the Examiner does not rely on Lum for disclosing any of the limitations "receiving a first power law function", "generating an auxiliary function from the transfer function and local differences between the transfer function and the first power law function", "fitting a second power law function to the auxiliary function", or "calculating a modelling error from the second power law function and the transfer function" found to be missing in the principal Haruki patent as applied to claims 1 and 18, as fully discussed above. Consequently, the Examiner has failed to establish a *prima facie* case that claims 14 and 31 are obvious in view of the combination of Haruki and Lum, and claims 14 and 31 should be allowed to issue for at least this reason. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992).

Applicant respectfully submits that all claims are in condition for allowance, which action is kindly requested. No fees are believed due, however, please apply any applicable charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: 6/20/07



John F. Horvath
Reg. No. 47,663

Customer No. 021876

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